

EXHIBIT C

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION**

PersonalWeb Technologies, LLC and)	
Level 3 Communications, LLC,)	Civil Action No. 6:11-cv-660
)	(LED)
Plaintiffs,)	
)	
v.)	
)	JURY TRIAL REQUESTED
EMC Corporation and VMware, Inc.,)	
)	
Defendants.)	
)	

**DEFENDANTS EMC CORPORATION’S AND VMWARE, INC.’S
INVALIDITY CONTENTIONS**

I. INTRODUCTION

Pursuant to Rule 3-3 of the Patent Local Rules (“P.R.”) of the Eastern District of Texas, Defendants EMC Corporation and VMware, Inc. (collectively, “Defendants”) hereby provide their Invalidity Contentions with respect to the claims asserted by Plaintiff PersonalWeb Technologies LLC (“PersonalWeb”) in its Supplemental Disclosure of Asserted Claims and Infringement Contentions. PersonalWeb has asserted against at least one Defendant: claims 1-4, 29-33 and 41 of U.S. Patent No. 5,978,791 (“the ’791 Patent”); claims 36 and 38 of U.S. Patent No. 6,415,280 (“the ’280 Patent”); claims 1, 2, 4 and 7 of U.S. Patent No. 6,928,442 (“the ’442 Patent”); claims 24, 32, 70, 81, and 86 of U.S. Patent No. 7,802,310 (“the ’310 Patent”); claims 10, 21, and 34 of U.S. Patent No. 7,945,539 (“the ’539 Patent”); claim 1 of U.S. Patent 7,945,544 (“the ’544 Patent”); claims 30 of U.S. Patent No. 7,949,662 (“the ’662 Patent”); and claims 1, 2, 81, and 83 of U.S. Patent No. 8,001,096 (“the ’096 Patent”) (collectively “the Asserted Claims”).

In these Invalidity Contentions, with respect to each asserted claim, Defendants: (a) identify each currently known item of prior art that either anticipates or renders obvious each asserted claim; (b) specify whether each such item of prior art anticipates or renders obvious the applicable claims; (c) submit charts for illustrative prior art references identifying where each element is disclosed or rendered obvious by the prior art, including for each element that is governed by 35 U.S.C. § 112(6), the identity of the structure(s), act(s), or material(s) in the prior art that perform the claimed function; and (d) identify the grounds for invalidating asserted claims based on indefiniteness, enablement, or written description under 35 U.S.C. § 112.

In addition, pursuant to P.R. 3-4(a) and (b), Defendants produce documents currently in their possession, custody, or control required to accompany these Invalidity Contentions.

II. RESERVATION OF RIGHTS

Consistent with P.R. 3-6, Defendants reserve the right to amend these Invalidity Contentions. For example, Defendants reserve the right to amend these Invalidity Contentions if PersonalWeb later provides any information that it failed to provide in its P.R. 3-1 and 3-2 disclosures, or if PersonalWeb amends its P.R. 3-1 or 3-2 disclosures in any way. Moreover, discovery has only recently begun, and Defendants' prior art investigation is not complete. Defendants have not had the opportunity to depose any of the named inventors of the patents-in-suit.

Defendants reserve the right to revise, amend, or supplement its Invalidity Contentions as it receives information pursuant to its discovery requests, consistent with the Patent Local Rules and the Federal Rules of Civil Procedure.

Moreover, Defendants reserve the right to revise, amend, or supplement their contentions concerning the invalidity of the asserted claims, which may change depending upon the Court's construction of claim terms, any findings as to the priority date of the asserted claims, and/or

positions that PersonalWeb or its expert witnesses may take concerning claim interpretation, infringement, and/or invalidity issues.

In addition to these Invalidity Contentions and prior art identified herein, Defendants hereby relies on and incorporates by reference and expressly reserves the right to rely upon all invalidity contentions, including all invalidity positions and all prior art cited therein, against PersonalWeb by any present or former defendant in Plaintiffs' lawsuits (including but not limited to those listed below) as well as any proceedings in the Patent Office relating to the Patents-in-Suit, including any reexaminations or inter partes review. Defendants also expressly incorporates by reference the production of documents associated with the invalidity contentions in those cases. Known actions involving one or more of the Patents-in-Suit include:

1. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. NEC Corporation of America, Inc.*, 6:11-CV-655 (E.D. Tex.)
2. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Google, Inc. and YouTube, LLC*, 6:11-656
3. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Amazon.com Inc., Amazon Web Services LLC, and DropBox, Inc.*, 6:11-CV-658 (E.D. Tex.)
4. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Caringo, Inc.*, 6:11-CV-659 (E.D. Tex.)
5. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. NetApp. Inc.*, 6:11-CV-00657 (E.D. Tex.)
6. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Autonomy, Inc., Hewlett-Packard Co., and HP Enterprise Services, LLP*, 6:11-CV-683 (E.D. Tex.)

7. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Nexsan Technologies, Inc.*, 6:12-CV-657 (E.D. Tex.)
8. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Yahoo! Inc.*, 6:12-CV-658 (E.D. Tex.)
9. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Rackspace US, Inc. and Rackspace Hosting, Inc.*, 6:12-CV-659 (E.D. Tex.)
10. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Apple Inc.*, 6:12-CV-660 (E.D. Tex.)
11. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. International Business Machines Corporation*, 6:12-CV-661 (E.D. Tex.)
12. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Facebook Inc.*, 6:12-CV-662 (E.D. Tex.)
13. *PersonalWeb Technologies, LLC and Level 3 Communications, LLC v. Microsoft Corporation*, 6:12-CV-663 (E.D. Tex.)

Prior art not included in this disclosure, whether known or not known to Defendants, may later become relevant. In particular, Defendants are currently unaware of the extent, if any, to which PersonalWeb will contend that limitations of the asserted claims are not disclosed in the prior art identified by Defendants. To the extent that such an issue arises, Defendants reserve the right to identify other references that would have made the addition of the allegedly missing limitation to the disclosed device or method obvious.

Defendants' claim charts submitted as part of these Invalidity Contentions cite to particular teachings and disclosures of the prior art as applied to features of the asserted claims. The cited portions are only examples, and Defendants reserve the right to rely on uncited

portions of the prior art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation. Defendants further reserve the right to rely on uncited portions of the prior art references, other publications, and testimony to establish bases for obviousness (including but not limited to reasons to combine the prior art references with other prior art references).

The references discussed in the claim charts may disclose the elements of the asserted claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant time frame. The suggested obviousness combinations are sometimes provided in the alternative to anticipation contentions and are not meant to suggest that any reference included in the combinations is not by itself anticipatory.

For purposes of these Invalidity Contentions, Defendants identify prior art references and provide element-by-element claim charts based in part on the apparent constructions of the asserted claims advanced by PersonalWeb in its Infringement Contentions. Nothing stated herein shall be treated as an admission or suggestion that Defendants agree with PersonalWeb regarding either the scope of any of the asserted claims or the claim constructions advanced by it in its Infringement Contentions or anywhere else. Moreover, nothing in these Invalidity Contentions shall be treated as an admission that any of Defendants' products meet any limitations of the claims.

Depending on the Court's construction of claim terms, and/or positions that PersonalWeb or its expert witness(es) may take concerning claim interpretation, infringement, and/or invalidity issues, different charted prior art references may be of greater or lesser relevance and

different combinations of these references may be implicated. Given this uncertainty, the charts may reflect alternative applications of the prior art against the asserted claims.

III. INVALIDITY CONTENTIONS BASED ON 35 U.S.C. §§ 102 AND 103

A. Identification of Prior Art

In addition to the references cited on the face of the Patents-in-Suit, the admitted prior art references in the specifications of the Patents-in-Suit¹, the prosecution histories of the Patents-in-Suit, the references cited in any reexaminations or inter partes reviews of the Patents-in-Suit, and the references cited in any invalidity contentions submitted in any action or proceedings involving the Patents-in-Suit, Defendants hereby identify prior art references, systems, and products in this section. These prior art references, systems, and products may disclose the elements of the Asserted Claims either explicitly, inherently, or via an obvious combination and may also be relied upon to show the state of the art in the relevant timeframes.

Defendants contend that at least some of the systems and products disclosed in one or more of the prior art references identified here or in the attached exhibits are prior art under 35 U.S.C. §§ 102(a), (b), and/or (g), and/or 103. Defendants reference to any particular component, device, machine, or other product in these Invalidity Contentions should also be interpreted as a reference to the product itself and any corresponding patents, publications, or product literature cited here or in the attached exhibits that relate to the cited component, device, machine, or other product. At least some of the products were publicly disclosed, used, sold, or offered for sale in the United States before, and potentially more than a year before, the earliest priority date of the Asserted Claims of the Patents-in-Suit. Moreover, many of the inventive research, design, and development activities concerning these products and technologies occurred in the United States

¹ The admitted prior art of the Patents-in-Suit include the systems and methods described in the “Background of the Invention” section of the Patents-in-Suit.

before the earliest priority date of the Asserted Claims of the Patents-in-Suit. Defendants do not yet have complete information regarding the dates by which some of the cited products were publicly disclosed, used, sold, or offered for sale, the circumstances under which the research, design, and development activities were conducted, and the identities of the particular individuals involved in such activities through publicly available patents, publications, and product literature. Defendants anticipate that the actual dates, circumstances, and identities of individuals will be the subject of third party discovery during this lawsuit. Pursuant to P.R. 3-3, and subject to Defendants' reservations of rights set out above, Defendants identify the following references on which they may rely as invalidating one or more of the asserted claims of the Patents-in-Suit.

1. Patent References

No.	Number and Name	Country of Origin	Issue Date
1.	5,649,196 (Woodhill, et al.) EMCVMW00070262– EMCVMW00070288	United States	Jul. 15, 1997
2.	7,359,881 (Stefik, et al.) EMCVMW00071210– EMCVMW00071254	United States	Apr. 15, 2008
3.	5,475,826 (Fischer) EMCVMW00070208– EMCVMW00070220	United States	Dec. 12, 1995
4.	5,940,504 (Griswold) EMCVMW00070457– EMCVMW00070477	United States	Aug. 17, 1999
5.	4,641,274 (Swank) EMCVMW00070058– EMCVMW00070077	United States	Feb. 3, 1987
6.	5,129,074 (Kikuchi, et al.) EMCVMW00070112– EMCVMW00070132	United States	Jul. 7, 1992

No.	Number and Name	Country of Origin	Issue Date
7.	5,446,881 (Mammel, Jr.) EMCVMW00070159– EMCVMW00070168	United States	Aug. 29, 1995
8.	5,446,888 (Pyne) EMCVMW00070169– EMCVMW00070184	United States	Aug. 29, 1995
9.	5,606,609 (Houser, et al.) EMCVMW00070221– EMCVMW00070251	United States	Feb. 25, 1997
10.	5,640,564 (Hamilton, et al.) EMCVMW00070252– EMCVMW00070261	United States	Jun. 17, 1997
11.	5,687,361 (Sarkar) EMCVMW00070289– EMCVMW00070305	United States	Nov. 11, 1997
12.	5,819,282 (Hooper, et al.) EMCVMW00070342– EMCVMW00070358	United States	Oct. 6, 1998
13.	5,835,940 (Yorimitsu, et al.) EMCVMW00070359– EMCVMW00070420	United States	Nov. 10, 1998
14.	5,920,861 (Hall, et al.) EMCVMW00070421– EMCVMW00070456	United States	Jul. 6, 1999
15.	5,990,810 (Williams) EMCVMW00070793– EMCVMW00070843	United States	Nov. 23, 1999
16.	6,076,084 (Harlan) EMCVMW00070844– EMCVMW00070855	United States	Jun. 13, 2000
17.	6,816,872 (Squibb) EMCVMW00070856– EMCVMW00070879	United States	Nov. 9, 2004
18.	7,133,845 (Ginter, et al.) EMCVMW00070880–	United States	Nov. 7, 2006

No.	Number and Name	Country of Origin	Issue Date
	EMCVMW00071209		
19.	7,984,509 (Ginter, et al.) EMCVMW00071255– EMCVMW00071568	United States	Jul. 19, 2011
20.	4,652,990 (Pallen, et al.) EMCVMW00070078– EMCVMW00070105	United States	Mar. 24, 1987
21.	4,764,928 (Akerberg) EMCVMW00070106– EMCVMW00070111	United States	Aug. 16, 1988
22.	5,163,147 (Orita) EMCVMW00070133– EMCVMW00070142	United States	Nov. 10, 1992
23.	5,404,508 (Konrad, et al.) EMCVMW00070143– EMCVMW00070158	United States	Apr. 4, 1995
24.	5,452,447 (Nelson, et al.) EMCVMW00070185– EMCVMW00070207	United States	Sep. 19, 1995
25.	5,764,972 (Crouse, et al.) EMCVMW00070306– EMCVMW00070341	United States	Jun. 9, 1998
26.	5,982,891 (Ginter, et al.) EMCVMW00070478– EMCVMW00070792	United States	Nov. 9, 1999
27.	5,050,212 (Dyson) EMCVMW00069753– EMCVMW00069758	United States	Sep. 17, 1991
28.	5,577,249 (Califano) EMCVMW00072820– EMCVMW00072844	United States	Nov. 19, 1996
29.	4,295,124 (Roybal) EMCVMW00072792– EMCVMW00072806	United States	Oct. 13, 1981
30.	5,572,590 (Chess)	United States	Nov. 5, 1996

No.	Number and Name	Country of Origin	Issue Date
	EMCVMW00072812– EMCVMW00072819		
31.	4,309,569 (Merkle) EMCVMW00072807– EMCVMW00072811	United States	Jan. 5, 1982

2. Publication References

No.	Title	Date of Publication	Author(s) and Publisher
51.	Location-Independent Naming for Virtual Distributed Software Repositories (“Browne II Publication”) EMCVMW00068486– EMCVMW00059492	Feb. 1995	Browne, S., et al. (University of Tennessee)
52.	Location-Independent Naming for Virtual Distributed Software Repositories (“Browne I Publication”) EMCVMW00071569– EMCVMW00071586	Nov. 11, 1994	Browne, S., et al. (University of Tennessee)
53.	An Architecture for Bulk File Distribution (“Moore Publication”) EMCVMW00071587– EMCVMW00071591	Jul. 27, 1994	Moore, K., et al. (Network Working Group Internet Draft)
54.	The Frederick W. Kantor Contents-Signature System Version 1.22 User Manual (“Kantor Publication”) EMCVMW00071670– EMCVMW00071917	Aug. 10, 1993	Kantor, F. (posted publicly online to electronic Bulletin Board Systems including “The Invention Factory” and “Channel 1”)
55.	ESM: Product Introduction EMCVMW00071624– EMCVMW00071669	Apr. 1994	Written and published by Legent Corporation
56.	Re: dl/describe (File descriptions) (“Langer Publication”) EMCVMW00071918–	Aug. 7, 1991	Langer, A. (posted to “alt.sources” newsgroup)

No.	Title	Date of Publication	Author(s) and Publisher
	EMCVMW00071923		
57.	Replication in the Harp File System ("Liskov Publication") EMCVMW00071599– EMCVMW00071623	Jul. 1991	Liskov, B., et al. (MIT)
58.	Distributed Parallel Data Storage Systems: A Scalable Approach to High Speed Image Servers ("Tierney Publication") EMCVMW00070047– EMCVMW00070057	Oct. 1994	Tierney, B., et al. (Association for Computing Machinery)
59.	Coda: A Highly Available File System for a Distributed Workstation Environment ("Satyanarayanan I Publication") EMCVMW00072598– EMCVMW00072610	April 1990	Satyanarayanan, M., et al. (IEEE)
60.	Scalable, Secure, and Highly Available Distributed File Access ("Satyanarayanan II Publication") EMCVMW00072611– EMCVMW00072622	May 1990	Satyanarayanan, M. (IEEE)
61.	Copy Detection Mechanisms for Digital Documents ("Brin Publication") EMCVMW00069785– EMCVMW00069805; EMCVMW00069806– EMCVMW00069817	Oct. 31, 1994 1995	Brin, S., et al. (Association for Computing Machinery)
62.	Finding Similar Files in a Large File System ("Manber Publication") EMCVMW00069942– EMCVMW00069952	Oct. 1993	Manber, U. (USENIX)
63.	Accessing Files in an Internet: The Jade File System ("Rao Publication") EMCVMW00070006– EMCVMW00070034	Jun. 1993	Rao, H.C., and Peterson, L.L. (IEEE)
64.	The Vesta Repository: A File System Extension for Software Development ("Chiu Publication") EMCVMW00069828–	Jun. 14, 1993	Chiu, S., and Levin, R. (Systems Research Center)

No.	Title	Date of Publication	Author(s) and Publisher
	EMCVMW00069867		
65.	Minimal Space, Average Linear Time Duplicate Deletion (“Teuhola Publication”) EMCVMW00070035– EMCVMW00070046	Mar. 1991	Teuhola, J., and Wegner, L. (Association for Computing Machinery)
66.	The Echo Distributed File System (“Birrell Publication”) EMCVMW00069759– EMCVMW00069784	Sep. 10, 1993	Birrell, A.D., et al. (Systems Research Center)
67.	Some Applications of Rabin’s Fingerprinting Method, in Sequences II (R. Capocelli et al., eds.) (“Broder Publication”) EMCVMW00069818– EMCVMW00069827	1993	Broder, A.Z. (Springer Verlag)
68.	A User-Level Replicated File System (“Fowler Publication”) EMCVMW00069868– EMCVMW00069879	Jun. 21-25, 1993	Fowler, G., et al. (USENIX)
69.	Japanese Unexamined Pat. App. Pub. No. H6-348760 EMCVMW00069880– EMCVMW00069896	Dec. 22, 1994	Japan Patent Office
70.	The Vesta Approach to Precise Configuration of Large Software Systems (“Levin Publication”) EMCVMW00069897– EMCVMW00069941	Jun. 14, 1993	Levin, R., and McJones, P.R. (Systems Research Center)
71.	A Coherent Distributed File Cache with Directory Write-Behind (“Mann Publication”) EMCVMW00069953– EMCVMW00070005	Jun. 10, 1993	Mann, T., et al. (Systems Research Center)
72.	Issues in the Design and Use of a Distributed File System (“Sturgis Publication”) EMCVMW00072623– EMCVMW00072637	Jul. 1980	Sturgis, J., and Israel, J. (Xerox Corporation)

No.	Title	Date of Publication	Author(s) and Publisher
73.	The MD5 Message-Digest Algorithm (“Rivest Publication”) EMCVMW00069447– EMCVMW00069468	Apr. 1992	Rivest, R. (Internet RFC 1321)
74.	‘Fingerprinting’ – A Technique for File Identification and Maintenance (“McGregor Publication”) EMCVMW00069370– EMCVMW00069372	1982	McGregor, D.R. and Mariani, J.A. (<u>Software Practice and Experience</u>)
75.	Hashing Functions (“Knott Publication”) EMCVMW00069373– EMCVMW00069386	1975	Knott, D. (The Computer Journal)
76.	A Survey of Encryption Standards (“Kaliski Publication”) EMCVMW00069425– EMCVMW00069432	Dec. 1993	Kaliski, B. (IEEE Micro)
77.	Implementing a Relational Database by Means of Specialized Hardware, ACM Transactions on Database Systems (“Babb Publication”) EMCVMW00069396– EMCVMW00069424	Mar. 1979	Babb, E. (ACM Transactions on Database Systems)
78.	Duplicate Record Elimination in Large Data Files (“Bitton Publication”) EMCVMW00069341– EMCVMW00069351	Jun. 1983	Bitton, D. & DeWitt, D. (ACM Transactions on Database Systems)
79.	Fingerprinting by Random Polynomials (“Rabin Publication”) EMCVMW00069433– EMCVMW00069446	1981	Rabin, M. (Center for Research in Computing Technology)
80.	An Introduction to Digest Algorithms (“Williams I Publication”) EMCVMW00069387– EMCVMW00069395	Nov. 1994	Williams, R. (Rocksoft)
81.	An algorithm for matching text (possibly original) (“Williams II Publication”) EMCVMW00069352–	Jan. 27, 1992	Williams, R. (posted to “comp.compression” newsgroup)

No.	Title	Date of Publication	Author(s) and Publisher
	EMCVMW00069355		
82.	How to Use Anonymous FTP (“Deutsch Publication”) EMCVMW00069657– EMCVMW00069670	May 1994	Deutsch, P., et al. (Internet RFC 1635)
83.	Uniform Resource Locators (URL) (“Berners-Lee Publication”) EMCVMW00069671– EMCVMW00069696	Dec. 1994	Berners-Lee, T. et al. (Internet RFC 1738)
84.	An Open Operation System for a Single- User Machine (“Lampson Publication”) EMCVMW00071985– EMCVMW00071992	Dec. 1979	Lampson, B. and Sproull, R. (ACM Operating System Review)
85.	Operating Systems Design and Implementation (“Tanenbaum Publication”) EMCVMW00072684– EMCVMW00072777	1987	Tanenbaum, A. (Prentice-Hall)
86.	One-Way Hash Functions: Using cryptographic algorithms for hashing (“Schneier Publication”) EMCVMW00069744– EMCVMW00069752	1991	Schneier, B. (Dr. Dobb’s Journal)

3. Items Offered for Sale or Publicly Known References Under Section 102(b²)

No.	Item Offered for Sale or Publicly Used or Known	Date	Identity of the Person or Entity
101.	Legent Enterprise Storage Manager Product EMCVMW00071624– EMCVMW00071669	Prior to April 1994	Legent Corp.
102.	BFD Package (also known as “LIFN	At least as early	Keith Moore

² As noted previously, in addition to this listing, Defendants also contend that some of the systems and products described in the prior art patents and publications may also have been sold or publicly known. To the extent that Defendants identify relevant facts relating to the sale or use of additional products and systems through discovery, Defendants will supplement their contentions.

No.	Item Offered for Sale or Publicly Used or Known	Date	Identity of the Person or Entity
	System”) EMCVMW00068486– EMCVMW00059492; EMCVMW00071569– EMCVMW00071586; EMCVMW00071587– EMCVMW00071591	as Jul. 27, 1994	
103.	The Frederick W. Kantor Contents-Signature System Version 1.22 Product EMCVMW00071670– EMCVMW00071917; EMCVMW00071925	August 7, 1993 ³	Frederick W. Kantor
104.	Williams’ Blocklets System EMCVMW00071929– EMCVMW00071938 EMCVMW00072570– EMCVMW00072597	Early 1992	Ross Williams
105.	Vesta Software Configuration Management System EMCVMW00069828– EMCVMW00069867	June 10, 1992	Systems Research Center/Digital Equipment Corp.

4. *Derivation Under Section 102(f)*

Defendants do not have any disclosures under 35 U.S.C. § 102(f) at this time. Discovery is ongoing, however, and Defendants reserve the right to assert any of the preceding items of prior art under 35 U.S.C. § 102(f), especially with respect to items of prior art where further investigation reveals that the purported inventors of the Patents-in-Suit derived the invention from the prior art and/or the author(s), maker(s), or inventor(s) of the prior art.

³ Prior versions of FWKCS offered similar functionality. Version 1.02 was released in October 1990.

5. *Priority of Invention References Under Section 102(g)*

To the extent the inventions identified in the patents, publications, systems, and other prior art to the Patents-in-Suit identified in these contentions were conceived by another and diligently reduced to practice before the alleged conception and reduction to practice of the Asserted Claims of the Patents-in-Suit by the named inventors of those patents, Defendants allege that such prior art inventions invalidate the Plaintiffs' Patents-in-Suit under 35 U.S.C. § 102(g). Based on Defendants' investigation to date, potential § 102(g) activities include without limitation: (1) Legent Corporation employees who developed Legent Enterprise Storage Manager, including James R. Woodhill, (2) the developers of the LIFN system, including Keith Moore, and (3) the developer of the Frederick W. Kantor Contents Signature System, Frederick W. Kantor. These systems were conceived and reduced to practice in the United States prior to the filing date of the patents-in-suit.

B. Invalidity Charts

As illustration of how these references invalidate all asserted claims, Defendants has provided accompanying charts for each asserted patent as listed in the tables below. In the tables, "No." corresponds to the number of the prior art reference identified above. "A" indicates where Defendants have charted anticipation, "O" indicates where Defendants have charted obviousness, and "A/O" indicates where Defendants have charted both anticipation and obviousness. "Chart" refers to the designation of the attached charts that identify where specifically in each item of prior art each asserted claim is found, including for each element governed by 35 U.S.C. § 112(6), the identity of the structure(s), act(s), or material(s) in each item of prior art that performs the claimed function.

'791 PATENT			
Prior Art No.	Prior Art Reference	Anticipation/ Obviousness	Chart
1	5,649,196 (Woodhill, et al.)	A/O	A-1
4	5,940,504 (Griswold)	O	A-1
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively LIFN Publications)	A/O	A-51
54	Kantor Publication	A/O	A-54
56	Langer Publication	A/O	A-56
101	Legent Enterprise Storage Manager Product	A/O	A-101
102	LIFN System	A/O	A-102
103	The Frederick W. Kantor Contents-Signature System Version 1.22 Product	A/O	A-103
104	Williams' Blocklets System	A/O	A-104
105	Vesta Software Configuration Management System	A/O	A-105
5	4,641,274 (Swank)	A/O	A-5
6	5,129,074 (Kikuchi, et al.)	A/O	A-6
7	5,446,881 (Mammel, Jr.)	A/O	A-7
8	5,446,888 (Pyne)	A/O	A-8
9	5,606,609 (Houser, et al.)	A/O	A-9
10	5,640,564 (Hamilton, et al.)	A/O	A-10
11	5,687,361 (Sarkar)	A/O	A-11
12	5,819,282 (Hooper, et al.)	A/O	A-12
13	5,835,940 (Yorimitsu, et al.)	A/O	A-13
14	5,920,861 (Hall, et al.)	A/O	A-14
15	5,990,810 (Williams)	A/O	A-15
16	6,076,084 (Harlan)	A/O	A-16
17	6,816,872 (Squibb)	A/O	A-17
18	7,133,845 (Ginter, et al.)	A/O	A-18
23	5,404,508 (Konrad, et al.)	O	A-9; A-10; A-11;

'791 PATENT			
Prior Art No.	Prior Art Reference	Anticipation/ Obviousness	Chart
			A-12; A-62; A-65
27	5,050,212 (Dyson)	A/O	A-27
28	5,577,249 (Califano)	A/O	A-28
29	4,295,124 (Roybal)	A/O	A-29
30	5,572,590 (Chess)	A/O	A-30
61	Brin Publication	A/O	A-61
62	Manber Publication	A/O	A-62
63	Rao Publication	A/O	A-63
64	Chiu Publication	A/O	A-64
65	Teuhola Publication	A/O	A-65
67	Broder Publication	O	A-72
72	Sturgis Publication	A/O	A-72

'280 PATENT			
Prior Art No.	Prior Art Reference	Anticipation/ Obviousness	Chart
1	5,649,196 (Woodhill, et al.)	A/O	B-1
2	7,359,881 (Stefik, et al.)	A/O	B-2
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively "LIFN Publications")	A/O	B-51
55	ESM: Product Introduction	A/O	B-55
56	Langer Publication	A/O	B-56
57	Liskov Publication	A/O	B-57
101	Legent Enterprise Storage Manager Product	A/O	B-101
102	LIFN System	A/O	B-102
105	Vesta Software Configuration Management	A/O	B-105

'280 PATENT			
Prior Art No.	Prior Art Reference	Anticipation/ Obviousness	Chart
	System		
5	4,641,274 (Swank)	A/O	B-5
8	5,446,888 (Pyne)	A/O	B-8
10	5,640,564 (Hamilton, et al.)	A/O	B-10
11	5,687,361 (Sarkar)	A/O	B-11
12	5,819,282 (Hooper, et al.)	A/O	B-12
13	5,835,940 (Yorimitsu, et al.)	A/O	B-13
15	5,990,810 (Williams)	A/O	B-15
16	6,076,084 (Harlan)	A/O	B-16
19	7,984,509 (Ginter, et al.)	A/O	B-19
30	5,572,590 (Chess)		B-30
59	Satyanarayanan I Publication	A/O	B-59
61	Brin Publication	A/O	B-61
62	Manber Publication	A/O	B-62
64	Chiu Publication	A/O	B-64 <i>see also</i> B-2; B-5; B-19
65	Teuhola Publication	A/O	B-65
66	Birrell Publication	O	B-5; B-19
67	Broder Publication	O	B-72
72	Sturgis Publication	A/O	B-72

'442 PATENT			
Prior Art No.	Prior Art Reference	Anticipation/ Obviousness	Chart(s)
1	5,649,196 (Woodhill, et al.)	A/O	C-1
2	7,359,881 (Stefik, et al.)	O	C-2

'442 PATENT			
Prior Art No.	Prior Art Reference	Anticipation/ Obviousness	Chart(s)
3	5,475,826 (Fischer)	A/O	C-3
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively "LIFN Publications")	A/O	C-51
56	Langer Publication	A/O	C-56 <i>see also</i> C-15
101	Legent Enterprise Storage Manager Product	A/O	C-101
102	LIFN System	A/O	C-102
104	Williams' Blocklets System	A/O	C-104
5	4,641,274 (Swank)	A/O	C-5 <i>see also</i> C-64
6	5,129,074 (Kikuchi, et al.)	A/O	C-6
7	5,446,881 (Mammel, Jr.)	A/O	C-7
8	5,446,888 (Pyne)	A/O	C-8
10	5,640,564 (Hamilton, et al.)	A/O	C-10
11	5,687,361 (Sarkar)	A/O	C-11
12	5,819,282 (Hooper, et al.)	A/O	C-12
13	5,835,940 (Yorimitsu, et al.)	A/O	C-13
14	5,920,861 (Hall, et al.)	A/O	C-14
15	5,990,810 (Williams)	A/O	C-15
16	6,076,084 (Harlan)	A/O	C-16
17	6,816,872 (Squibb)	A/O	C-17
18	7,133,845 (Ginter, et al.)	A/O	C-18
19	7,984,509 (Ginter, et al.)	O	C-27
20	4,652,990 (Pallen, et al.)	O	C-64
21	4,764,928 (Akerberg)	O	C-5; C-64
22	5,163,147 (Orita)	O	C-10; C-11; C-12
24	5,452,447 (Nelson, et al.)	O	C-11; C-65
26	5,982,891 (Ginter, et al.)	O	C-10; C-12; C-65

'442 PATENT			
Prior Art No.	Prior Art Reference	Anticipation/ Obviousness	Chart(s)
27	5,050,212 (Dyson)	A/O	C-27
30	5,572,590 (Chess)	A/O	C-30
61	Brin Publication	A/O	C-61 <i>see also</i> C-10; C-11; C-12; C-65
62	Manber Publication	A/O	C-62
63	Rao Publication	A/O	C-63
64	Chiu Publication	A/O	C-64 <i>see also</i> C-5
65	Teuhola Publication	A/O	C-65
66	Birrell Publication	O	C-2; C-64
67	Broder Publication	O	C-2; C-64
72	Sturgis Publication	A/O	C-72

'310 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
1	5,649,196 (Woodhill, et al.)	A/O	D-1
2	7,359,881 (Stefik, et al.)	A/O	D-2
3	5,475,826 (Fischer)	A/O	D-3
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively "LIFN Publications")	A/O	D-51
56	Langer Publication	A/O	D-56
57	Liskov Publication	A/O	D-57
58	Tierney Publication	O	D-58
101	Legent Enterprise Storage Manager Product	A/O	D-101
102	LIFN System	A/O	D-102

'310 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
104	Williams' Blocklets System	A/O	D-104
5	4,641,274 (Swank)	A/O	D-5 <i>see also</i> D-64
6	5,129,074 (Kikuchi, et al.)	A/O	D-6
7	5,446,881 (Mammel, Jr.)	A/O	D-7
8	5,446,888 (Pyne)	A/O	D-8
10	5,640,564 (Hamilton, et al.)	A/O	D-10
11	5,687,361 (Sarkar)	A/O	D-11
12	5,819,282 (Hooper, et al.)	A/O	D-12
13	5,835,940 (Yorimitsu, et al.)	A/O	D-13
14	5,920,861 (Hall, et al.)	A/O	D-14
15	5,990,810 (Williams)	A/O	D-15
16	6,076,084 (Harlan)	A/O	D-16
17	6,816,872 (Squibb)	A/O	D-17
18	7,133,845 (Ginter, et al.)	A/O	D-18
19	7,984,509 (Ginter, et al.)	A/O	D-19
24	5,452,447 (Nelson, et al.)	O	D-10; D-11; D-12; D-13; D-62; D-63
27	5,050,212 (Dyson)	A/O	D-27
62	Manber Publication	A/O	D-62
63	Rao Publication	A/O	D-63
64	Chiu Publication	A/O	D-64 <i>see also</i> D-2; D-5; D-19
65	Teuhola Publication	A/O	D-65

'310 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
66	Birrell Publication	O	D-66 <i>see also</i> D-64
67	Broder Publication	O	D-67 <i>see also</i> D-2; D-19; D-64; D-72
69	Japanese Unexamined Pat. App. Pub. No. H6-348760	O	D-69
72	Sturgis Publication	A/O	D-72

'539 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
1	5,649,196 (Woodhill, et al.)	A/O	E-1
2	7,359,881 (Stefik, et al.)	O	E-2
3	5,475,826 (Fischer)	O	E-3
4	5,940,504 (Griswold)	O	E-4
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively "LIFN Publications")	A/O	E-51
54	Kantor Publication	A/O	E-54
56	Langer Publication	A/O	E-56
57	Liskov Publication	A/O	E-57
58	Tierney Publication	O	E-58
101	Legent Enterprise Storage Manager Product	A/O	E-101
102	LIFN System	A/O	E-102
103	The Frederick W. Kantor Contents-Signature System Version 1.22 Product	A/O	E-103
105	Vesta Software Configuration Management System	A/O	E-105

'539 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
6	5,129,074 (Kikuchi, et al.)	A/O	E-6
62	Manber Publication	A/O	E-62
67	Broder Publication	O	E-67

'544 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
1	5,649,196 (Woodhill, et al.)	A/O	F-1
2	7,359,881 (Stefik, et al.)	O	F-2
3	5,475,826 (Fischer)	A/O	F-3
4	5,940,504 (Griswold)	O	F-4
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively "LIFN Publications")	A/O	F-51
54	Kantor Publication	A/O	F-54
56	Langer Publication	A/O	F-56 <i>see also</i> F-3; F-8, F-15, F-16, F-62
57	Liskov Publication	A/O	F-57
58	Tierney Publication	O	F-58
101	Legent Enterprise Storage Manager Product	A/O	F-101
102	LIFN System	A/O	F-102
103	The Frederick W. Kantor Contents-Signature System Version 1.22 Product	A/O	F-103
104	Williams' Blocklets System	A/O	F-104
105	Vesta Software Configuration Management System	A/O	F-105
6	5,129,074 (Kikuchi, et al.)	A/O	F-6

'544 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
8	5,446,888 (Pyne)	A/O	F-8
15	5,990,810 (Williams)	A/O	F-15
16	6,076,084 (Harlan)	A/O	F-16
62	Manber Publication	A/O	F-62
64	Chiu Publication	A/O	F-64
67	Broder Publication	O	F-67
69	Japanese Unexamined Pat. App. Pub. No. H6-348760	O	F-69

'662 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
1	5,649,196 (Woodhill, et al.)	A/O	G-1
2	7,359,881 (Stefik, et al.)	O	G-2
3	5,475,826 (Fischer)	O	G-3
4	5,940,504 (Griswold)	O	G-4
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively "LIFN Publications")	A/O	G-51
54	Kantor Publication	A/O	G-54
56	Langer Publication	A/O	G-56
57	Liskov Publication	A/O	G-57
58	Tierney Publication	O	G-58
101	Legent Enterprise Storage Manager Product	A/O	G-101
102	LIFN System	A/O	G-102
103	The Frederick W. Kantor Contents-Signature System Product Version 1.22	A/O	G-103
105	Vesta Software Configuration Management	A/O	G-105

'662 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
	System		
6	5,129,074 (Kikuchi, et al.)	A/O	G-6
10	5,640,564 (Hamilton, et al.)	A/O	G-10
11	5,687,361 (Sarkar)	A/O	G-11
12	5,819,282 (Hooper, et al.)	A/O	G-12
13	5,835,940 (Yorimitsu, et al.)	A/O	G-13
25	5,764,972 (Crouse, et al.)	O	G-25
62	Manber Publication	A/O	G-62
64	Chiu Publication	A/O	G-64
65	Teuhola Publication	A/O	G-65
67	Broder Publication	O	G-67
68	Fowler Publication	O	G-68
69	Japanese Unexamined Pat. App. Pub. No. H6-348760	O	G-69
70	Levin Publication	O	G-70
71	Mann Publication	O	G-70
72	Sturgis Publication	A/O	G-72

'096 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
1	5,649,196 (Woodhill, et al.)	A/O	H-1
2	7,359,881 (Stefik, et al.)	O	H-2
3	5,475,826 (Fischer)	O	H-3
4	5,940,504 (Griswold)	O	H-4
51-53	Browne II Publication, Browne I Publication, Moore Publication (collectively "LIFN	A/O	H-51

'096 PATENT			
Prior Art No.	Prior Art Reference Name	Anticipation/ Obviousness	Chart(s)
	Publications")		
54	Kantor Publication	A/O	H-54
56	Langer Publication	A/O	H-56
57	Liskov Publication	A/O	H-57
58	Tierney Publication	O	H-58
101	Legent Enterprise Storage Manager	A/O	H-101
102	LIFN System	A/O	H-102
103	The Frederick W. Kantor Contents-Signature System Version 1.22 Product	A/O	H-103
105	Vesta Software Configuration Management System	A/O	H-105
5	4,641,274 (Swank)	A/O	H-5 <i>see also</i> H-64
6	5,129,074 (Kikuchi, et al.)	A/O	H-6
19	7,984,509 (Ginter, et al.)	A/O	H-19
25	5,764,972 (Crouse, et al.)	O	H-25
61	Brin Publication	A/O	H-61
64	Chiu Publication	A/O	H-64 <i>see also</i> H-2; H-19
65	Teuhola Publication	A/O	H-65
66	Birrell Publication	O	H-66
67	Broder Publication	O	H-67
69	Japanese Unexamined Pat. App. Pub. No. H6-348760	O	H-69

As indicated above and in the accompanying charts, the examples set forth in the attached Exhibits are illustrative of how the prior art invalidates the asserted patents.

C. THE CLAIMED CONCEPTS WERE KNOWN

- 1. Using a “substantially unique identifier” based on “all” and “only” the data in a data item to perform basic file management functions was known.**

The claims of U.S. Patent No. 5,978,791 focus on the concept of using a “substantially unique identifier” – based on “all” and “only” the data in a data item – to perform basic file management functions.

The applicants indicated in their patent application that they were entitled to these broad claims because “[i]n *all* of the prior data processing systems, the names or identifiers provided to identify data items . . . are *always* defined relative to a specific context,” and “there is *no direct relationship* between the data names and the data item.” (’791 patent, col. 1, l. 65–col. 2, l. 3, col. 2, ll. 12-13, emphasis added.) They further argued to the PTO that the ’791 approach was inventive because it used data identifiers based on “all” and “only” the data in a data item to form the identifier. (Amend. of March 12, 1997 at 10–11.)

These representations were simply wrong. Prior data processing system *did use* identifiers based on the data in a data item itself, and not its context or pathname. In fact, these techniques were old and widely used. This is not surprising. The concept of using a mathematical function to create a “fingerprint” or “signature” for a data item based on the content of the data item predates the ’791 patent by decades. For example, IBM developed one of the first hash tables in the 1950s (*see, e.g.*, D. Knott, Hashing functions, The Computer Journal 18 (1975), vol. 3, at 274 (discussing “history of hashing”)), and Professor Ron Rivest of MIT introduced the MD5 algorithm referenced in the ’791 patent in the early 1990s. (*See, e.g.*, R. Rivest, “The MD5 Message-Digest Algorithm,” Internet RFC 1321 (Apr. 1992).) These hashing functions take as input the data contained in a file, or other data item, and produce a much smaller-sized output value, commonly called a “hash,” “hash value,” “message digest”

(“MD”), or “checksum.” (*See, e.g.*, McGraw-Hill Dictionary of Scientific and Technical Terms, (4th ed., 1989), at 860 (defining “hashing” as a “method for converting representations of values within fields, using keys, to a more compact form” and as an “addressing technique that uses keys to store and retrieve data in a file”); *see also* B. Kaliski, “A Survey of Encryption Standards,” IEEE Micro (Dec. 1993), pp. 74–81, at 77 (“Hash functions are also called message digests”).) For example, a file that is a million bytes (or even much larger) in size can be used as input to produce a hash value that is a mere 16 bytes in length. Because of the mathematical properties of the function, the odds that two different files will produce the identical 16 byte hash are extremely small: for example, with a 16 byte hash output, the odds that two randomly picked inputs have the same hash are 2^{-64} , or approximately one in sixteen billion billions. (B. Kaliski at 77.) Consequently, hashes are known as “signatures” or “fingerprints” because they identify data with high reliability, just like signatures or fingerprints are used to identify people with a high degree of certainty.

Although the '791 patent applicants suggested that they were the first to utilize these hashing functions to identify data items for file management applications, others working in the field used them for the same purposes more than a decade before the '791 patent. For example, at least sixteen years before the '791 patent was filed, researchers were already using content addressable file stores and a “hash function and bit array” to determine whether two records were identical, and to eliminate duplicate records. (*See, e.g.*, Babb, Implementing a Relational Database by Means of Specialized Hardware, ACM Transactions on Database Systems, Vol. 4, No.1, at 2-4, March 1979; Bitton and DeWitt at 256 (commenting on the work of Babb)). Likewise, file “fingerprinting” has long been known as a technique to see if two files were identical. (*See* Rabin, Fingerprinting by Random Polynomials, Center for Research in

Computing Technology, Harvard University, Report TR-15-81 at 1 and 9, 1981; *see also* Manber, at 3 (commenting on work of Rabin)).

Many prior art references disclose and use data identifiers exactly like those described and claimed in the '791 patent, as the patent has been construed by PersonalWeb in its infringement contentions. These references disclose identifiers that are location- and context-independent, that are determined using all of, and only, the contents of the data item, and that are formed using identical algorithms to those mentioned in the '791 patent. Illustrative prior art references include:

- LIFN Publications (Refs. 51-53);
- LIFN System (Ref. 102);
- Langer Publication (Ref. 56);
- Kantor Publication (Ref. 54);
- Frederick W. Kantor Contents-Signature System Version 1.22 Product (Ref. 103);
- Woodhill Patent (Ref. 1);
- Legent Enterprise Storage Manager Product (Ref. 101); and/or
- McGregor Publication (Ref. 74).

These prior art references provide just a handful of many examples of the use of content-based identifiers to perform basic file management functions. Defendants' attached invalidity charts (Exh. A) provide additional examples.

Indeed, the application of hash-based identifiers to these functions was so obvious that at least one commentator not only described the applications as "easy" but also posted these ideas publicly "to impede anyone who might independently have had the idea from patenting it." (Williams, "An algorithm for matching text (possibly original)", posted to the

“comp.compression” newsgroup on January 27, 1992)). In a later paper, as published before the ’791 patent, Williams once again identified the same ideas as the patent, plainly stating that “digest algorithms can be used . . . to generate unique fixed-length identifiers for arbitrary blocks of data in situations where the identifier of identical blocks must be the same” and that “a network of computers implementing a distributed database of documents could collect documents . . . and then synchronize at night by exchanging and comparing the digests of the new documents.” (R. Williams, “An Introduction to Digest Algorithms,” Rocksoft (Nov. 1994), at 13)).

In short, other than perhaps coining a new phrase – i.e., True Name – for a very old concept, there is absolutely nothing new disclosed or claimed in the ’791 patent concerning the use of location-independent, content-based data identifiers.

2. Using “a hash of the contents” to identify and manage multiple copies of data files in a network and was known.

U.S. Patent No. 6,415,280 (“the ’280 patent”) purports to address shortcomings in the prior art. (’280 patent, col. 3, ll. 5-19) It suggests that “it is therefore desirable to have a mechanism . . . to determine a common and substantially unique identifier for a data item, using only the data in the data item and not relying on any sort of context.” (’280 patent, col. 3, ll. 5-10) Moreover, “[i]t is further desirable to have a mechanism for reducing multiple copies of data items . . . and to have a mechanism which enables the identification of identical data items so as to reduce multiple copies.” (’280 patent, col. 3, ll. 11-16)

In the preferred embodiments, the substantially unique identifiers are used to “augment” standard file management functions of an operating system. (’280 patent, col. 6, ll. 12-19) For

example, a local directory extensions (LDE) table⁴ is indexed by a pathname or contextual name of a file and also includes True Names for most files. ('280 patent, col. 8, ll. 24-31) A True File registry (TFR) lists True Names, and stores “location, dependency, and migration information about True Files.” ('280 patent, col. 8, ll. 32-34, 37-39) True Files are identified in the True File registry by their True Names, and can be looked up in the registry by their True Names. ('280 patent, col. 8, ll. 35-37; col. 23, ll. 50-51.) This look-up provides, for each True Name, a list of the locations, such as file servers, where the corresponding file is stored. ('280 patent, col. 34, ll. 28-30; *see also* col. 15, ll. 62-64.)

The system also includes a “Mirror True File” background mechanism “to mirror (make copies) of the True File available elsewhere in the system.” ('280 patent, col. 35, ll. 15–18.) “In operation data items can be accessed by reference to their identities (True Names) independent of their present location. The actual data item or True File corresponding to a given data identifier or True Name may reside anywhere in the system (that is, locally, remotely, offline, etc.).” ('280 patent, col. 34, ll. 21–24.) If a data item is not present locally, the True File registry may be used to determine the location(s) of copies of the True File corresponding to a given True Name. ('280 patent, col. 34, ll. 27-31.) Another mechanism, the “Realize True File from Location” primitive mechanism, “tries to make a local copy of a True File, given its True Name and the name of a source location (processor or media) that may contain the True File.” ('280 patent, col. 34, ll. 31-35; *see also* col. 16, ll. 17-19.) If the source location is a remote processor, the Realize True File from Location mechanism sends a message to that remote processor and waits

⁴ According to the patent, a LDE table is a data structure which provides information about files and directories in the system and includes information in addition to that provided by the native file system. ('280 patent, col. 8, ll. 24-31.)

for a response. ('280 patent, col. 15, l. 66 -col. 16, l. 3.) If it receives a positive response, it enters the returned True File into the True File Registry. ('280 patent, col. 16, ll. 5-7.)

The '280 claims focus on the concept of using content-based identifiers like a hash of the contents of the file to store, request and obtain copies of data files from a set of servers. Claim 36, for example, simply requires storing copies of a data file on multiple servers in a network, and causing a copy of the file to be provided to a client in response to a request including a hash of the contents of the file.

Although applicants suggested in their application that they were the first to utilize these hashing functions to identify data items for file management applications, others working in the field used them for the same purposes more than a decade before the '280 patent. For example, file “fingerprinting” has long been known as a technique to see if two files are identical. (*See* Rabin, Fingerprinting by Random Polynomials, Center for Research in Computing Technology, Harvard University, Report TR-15-81 at 1 and 9, 1981; *see also* Manber, at 3 (commenting on work of Rabin)). Likewise, the use of “fingerprints” both to identify files and to check for duplicates also has long been known. (*See, e.g.*, D.R. McGregor and J.A. Mariani, ‘Fingerprinting’ – A Technique for File Identification and Maintenance, Software Practice & Experience 1165 (1982), vol. 12, no. 12 (“fingerprinting” technique used “to produce a quasi-unique identifier for a file, derived from that file's contents . . . [o]ne problem associated with current operating systems is the easy proliferation of multiple copies of programs and data . . . [t]he ‘fingerprinting’ technique described in this short note outlines a solution . . . we are using the file’s content, as opposed to the file's name as in conventional systems, to identify the file.”))

Many prior art references disclose and use data identifiers exactly like those described and claimed in the '280 patent, as the patent has been construed by PersonalWeb in its

infringement contentions, for exactly the same purposes. These references disclose identifiers that are location- and context-independent, that are determined using all of, and only, the contents of the data item, and that are formed using identical algorithms to those mentioned in the '280 patent.

Illustrative prior art references include:

- Woodhill Patent (Ref. 1);
- Stefik Patent (Ref. 2);
- LIFN Publications (Refs. 51-53);
- LIFN System (Ref. 102);
- Langer Publication (Ref. 56);
- Satyanarayanan I Publication (Ref. 59);
- Brin Publication (Ref. 61); and/or
- Legent Enterprise Storage Manager Product (Ref. 101).

These prior art references provide just a handful of many examples of the use of hash of the contents of a data file to perform basic file management functions. Defendants' attached invalidity charts (Exhibit B) provide additional examples.

3. Using a content-dependent name based on a hash function of the data file to control access to the data was known.

The asserted claims of the '442 and '310 patents generally relate to the use of a content-dependent name determined using a function (*e.g.*, a hash) of the data file to control access to licensed or authorized computers or users.

Many prior art references disclose and use content-dependent names to control access to data exactly as described and claimed in the '442 and '310 patents, as those patents have been construed by PersonalWeb in its infringement contentions. Illustrative examples include:

- LIFN Publications (Refs. 51-53);
- LIFN System (Ref. 102);
- Langer Publication (Ref. 56);
- Woodhill Patent (Ref. 1);
- the Legent Enterprise Storage Manager Product (Ref. 101);
- the Fischer Patent (Ref. 3);
- the Liskov Publication (Ref. 57); and/or
- Williams' Blocklets System (Ref. 104).

These prior art references provide just a handful of many examples of the using a content-dependent name based on a hash function of a data file to control access. Defendants' attached invalidity charts (Exhibit C-D) provide additional examples.

4. Using data identifiers based on segment identifiers (“hash of hashes”) to identify and access data items was known.

The asserted claims of the '539 and '544 patents generally relate to using data identifiers based on segment identifiers (“hash of hashes”) to identify and access data items in a network. The method involves using “segment identifiers” based at least in part on “a function of the data comprising the particular segment and only the data in the particular segment” (*e.g.*, a hash) and a “first identifier” based at least in part on “a second function of the plurality of segment identifiers” (*e.g.*, a “hash of hashes”).

Prior data processing systems *did use* identifiers based on the contents of a data item or its segments – and not the context or pathname – *including* identifiers based on a “hash of hashes.” In fact, these techniques were old and widely used. Professor Ralph Merkle and others were partitioning data items into segments, calculating identifiers for the segments using a hash function, and then “hashing the hashes” to create top-level identifiers for the data items as a

whole by the 1970s. (*See* Merkle, U.S. Patent No. 4,309,569, entitled “Method of Providing Digital Signatures,” filed Sept. 5, 1979, at col. 2, ll. 54-67 and Figure 1 (describes calculating signatures for a “vector of data items” by calculating signatures for segmented portions of the vector using a hash function, then combining the signatures using the same hash function) (“Merkle”). “Hash trees” – also known as “Merkle trees” – were well known in the field long before the patents-in-suit.⁵

Many prior art references disclose and use identifiers exactly like those described and claimed in the ’539 and ’544 patents, as those patents have been construed by PersonalWeb in its infringement contentions. Illustrative examples include:

- LIFN Publications (Refs. 51-53);
- LIFN System (Ref. 102);
- Langer Publication (Ref. 56);
- Kantor Publication (Ref. 54);
- Frederick W. Kantor Contents-Signature System Version 1.22 Product (Ref. 103);
- Woodhill Patent (Ref. 1);
- Legent Enterprise Storage Manager Product (Ref. 101); and/or
- Fischer Patent (3).

These prior art references provide just a handful of many examples of the use of “hash of hashes” to identify and access data items in a network. Defendants’ attached invalidity charts (Exhibits E-F) provide additional examples.

⁵ The idea of partitioning data into smaller segments (e.g., “pages” or “blocks”) has been known for decades. (*See, e.g.*, B. Lampson and R. Sproull, “An Open Operation System for a Single-User Machine,” ACM Operating System Review (Dec. 1979) at 4 (“The system organizes long-term storage (on disk) into files, each of which is a sequence of fixed-size pages ” and “[t]he data bytes of the file are contained in pages 1 through n.”) ; *see also* A. Tanenbaum, “Operating Systems Design and Implementation,” Prentice-Hall (1987) at 256.).

5. Using a digital data identifier based on the contents of the data item to control deletion of replicated data items was known.

The asserted claims of the '662 patent generally relate to using a digital data identifier based on the contents of the data item to control deletion of replicated data items. A unique identifier is used to determine whether other copies of a file (or portions thereof) exist elsewhere on a system before a data item is deleted.

Many prior art references disclose the use of a unique digital data identifier to control the deletion of copies of a data item as claimed in the '662 patent, as the patent has been construed by PersonalWeb in its infringement contentions. Illustrative examples include:

- LIFN Publications (Refs. 51-53);
- LIFN System (Ref. 102);
- Langer Publication (Ref. 56);
- Kantor Publication (Ref. 54);
- Frederick W. Kantor Contents-Signature System Version 1.22 Product (Ref. 103);
- Woodhill Patent (Ref. 1);
- Legent Enterprise Storage Manager Product (Ref. 101); and/or
- Vesta Software Configuration Management System (Ref. 105).

These prior art references provide just a handful of many examples of the use of digital data identifier to control the deletion of copies of a data item. Defendants' attached invalidity charts (Exhibit G) provide additional examples.

6. Using a digital data identifier based on the contents of a data item to map storage locations of files and parts of files in a file system was known.

The asserted claims of the '096 patent generally relate to using a digital data identifier based on the contents of a data item to map storage locations of files and parts of files in a file

system. In general, the claims relate to techniques for storing and accessing files that can be broken up into parts and then stored across multiple servers. Each part stored on a different server has a different digital data identifier that can be used to determine its location.

Many prior art references disclose the use of such techniques for storing and accessing data as claimed in the '096 patent, as the patent has been construed by PersonalWeb in its infringement contentions. Illustrative examples include:

- LIFN Publications (Refs. 51-53);
- LIFN System (Ref. 102);
- Langer Publication (Ref. 56);
- Kantor Publication (Ref. 54);
- Frederick W. Kantor Contents-Signature System Version 1.22 Product (Ref. 103);
- Woodhill Patent (Ref. 1);
- Legent Enterprise Storage Manager Product (Ref. 101); and/or
- Vesta Software Configuration Management System (Ref. 105).

These prior art references provide just a handful of many examples of the use such storage techniques. Defendants' attached invalidity charts (Exhibit H) provide additional examples.

D. REASONS TO MODIFY, EXTEND, OR COMBINE CLAIMED CONCEPTS

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts. There was a reason to make each combination; each combination of art would have produced no unexpected results; and each combination at most would simply represent a known alternative to one of

ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 415-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that a person of ordinary skill is "a person of creativity, not an automaton" and "in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 420-21.

In determining whether a claim is obvious, "[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id.* at 418. In that regard, a patent claim may be obvious if the combination of elements was obvious to try or there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. The obviousness determination includes consideration of inferences and creative steps that a person of ordinary skill in the art might use. In addition, when a reference is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, 35 U.S.C. § 103 likely bars its patentability.

Nevertheless, in addition to the information contained elsewhere in these contentions, Defendants hereby identify additional motivations and reasons to combine the cited art.

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the

time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation. The motivation and/or incentive to combine each of the prior art references and products identified in the accompanying appendices comes from many sources, including, but not limited to, the known, published prior art references and products themselves, the knowledge of those of ordinary skill in the art, the common field of technology of the references, the commonality of the objectives and purposes of the references, and the teachings in the references directed to solving the problems that the Patent-in-Suit was allegedly directed to solving. These references identify and address many of the same technical issues and suggest similar solutions to those issues. The reasons or motivation to combine the prior art would thus include, for example, the fact that the prior art is all in the art of data processing systems, and one of ordinary skill in the art implementing such a device would be motivated to investigate the various related existing devices, publications, and/or patents identified in these Invalidity Contentions to address these particular needs. Moreover, many of these references cross-reference and discuss one another, illustrating the close technical relationship among this group of references. To the extent any piece of prior art refers to or discusses other pieces of prior art, either expressly or inherently, it would have been obvious to combine those pieces of prior art for that reason. In addition, design incentives and other market forces would have prompted those combinations and modifications. Furthermore, many of the prior art references arise from common assignees or multiple companies operating within the relevant subject matter. The motivation to combine references includes the common objectives and subject matter of the identified references.

1. Combining or modifying prior art references to use the output of a hash of data or other function of data as a data identifier would have been obvious.

To the extent PersonalWeb contends that any reference identified by Defendants does not disclose using the output of a hash of data or other function of data as an identifier for the data,⁶ such limitations would have been well known to one of ordinary skill in the art. For example, such features are disclosed in “Some Applications of Rabin’s Fingerprinting Method,” by Andrei Broder (pp. 1 and 6-10); “Minimal Space, Average Linear Time Duplicate Deletion,” Teuhola et al. (pp. 63, 66-67, and 72); “A Program for Identifying Duplicated Code,” by Baker (pp. 4 and 6); “Duplicate Record Elimination in Large Data Files,” by Bitton et al. (pp. 255-256); “Copy Detection Mechanisms for Digital Documents,” by Brin et al. (pp. 7-10); FWKCS(TM) Contents_Signature System, Ver. 1.09, 1991, by Frederick W. Kantor; “Finding Similar Files in a Large File System,” by Manber (pp. 3, 5, and 6); “New Hash Functions and Their Use in Authentication and Set Equality,” by Wegman et al. (pp. 265-273); the Enterprise Storage Manager (“ESM”) manual (pp. 3-3 – 3-4, 2-2, 3-8, and 3-9); U.S. Patent No. 6,816,872 issued to Squibb (5:8-30 and 6:5-19); U.S. Patent No. 5,640,564 issued to Hamilton et al. (3:15-29); U.S. Patent No. 5,412,717 issued to Fischer (5:19-37 and 6:55-58); U.S. Patent No. 4,309,569 issued to Merkle (2:16-31); U.S. Patent No. 5,475,826 issued to Fischer (Abstract, 1:37-58, 2:31-37, and 51-59); U.S. Patent No. 5,202,982 issued to Gramlich et al. (Abstract, 2:52-3:3); U.S. Patent No. 5,649,196 issued to Woodhill et al. (Abstract, 2:20-38, 7:60-8:65); U.S. Patent No. 5,446,888 issued to Pyne (2:35-49, 4:21-62, and 7:47-64); U.S. Patent No. 5,446,881 issued to Mammel, Jr. (Abstract, 1:21-49, and 2:41-46); U.S. Patent No. 5,835,940 issued to Yorimitsu et

⁶ For example, the limitation “the identifier being determined using and depending on all of the data in the data item and only the data in the data item, whereby two identical data items in the system will have the same identifier” as disclosed in claim 1 of the ’791 Patent, with similar limitations being found in the remaining independent claims.

al. (16:5-33 and 18:17-19:4); U.S. Patent No. 6,076,084 issued to Harlan (1:43-67, 4:47-5:22); Japanese Unexamined Patent Application No. H06-348760 (¶¶0008, ¶¶0013, ¶¶0015, and ¶¶0018); U.S. Patent No. 5,129,074 issued to Kikuchi et al. (5:23-60 and 6:7-64); U.S. Patent No. 4,961,139 issued to Hong et al. (5:27-33, 6:35-7:26, and 9:4-10:3); U.S. Patent No. 4,888,681 issued to Barnes et al. (13:2-23); U.S. Patent No. 5,050,212 issued to Dyson (1:13-27, 3:11-35, and 4:11-20); U.S. Patent No. 5,303,361 issued to Colwell et al. (5:60-6:33); U.S. Patent No. 4,764,928 issued to Akerberg (3:17-64 and 4:20-63); U.S. Patent No. 5,572,590 issued to Chess (3:66-4:41); U.S. Patent No. 5,680,622 issued to Even (Abstract, 4:36-41, and 11:4-12:34); U.S. Patent No. 5,764,972 issued to Crouse et al. (18:20-19:22); U.S. Patent No. 4,641,274 issued to Swank (3:24-56); U.S. Patent No. 5,339,398 issued to Shah et al. (Abstract); U.S. Patent No. 5,577,249 issued to Califano (3:12-4:12, 6:33-7:22, and 8:29-56); and U.S. Patent No. 4,295,124 issued to Roybal (1:55-61, 2:63-3:6, 4:41-50, 5:38-6:10, and 8:55-65).

One of ordinary skill in the art would have understood that hashes provide for efficient ways to represent longer data strings and therefore would be advantageous to use as an identifier. Indeed, the references identified above demonstrate that hashing was widely used to compute checksum values for confirming the accuracy/integrity of the underlying data, to quickly access data from a database, and/or to identify duplicative data in databases, files, and/or data strings. Thus, one of ordinary skill in the art would have readily understood that by using a cryptographic hash as an identifier for underlying data, such as a UID used in a distributed file system, then duplicate data storage could be prevented thereby increasing the storage efficiency of the database. *See, e.g.,* U.S. Patent No. 5,202,982 issued to Gramlich et al. at Abstract. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

2. Combining or modifying prior art references to use an identifier based only on an MD5 hash or based on a hash combined with a length value would have been obvious.

To the extent PersonalWeb contends that any reference does not disclose the particular “identity means” disclosed in the ’791 patent, a person of skill in the art at the time of the ’791 patent would have found it obvious to modify the reference to include identifiers with the same structure and function as those disclosed in the patent and/or combine the reference with one of the many prior art references that disclose it. For example, it would have been obvious to use an identifier consisting only of an MD5 hash such as the identifier disclosed in the Langer Publication. Such a modification or combination would have been desirable to simplify file access where a more sophisticated syntax allowing for multiple protocols and multiple databases is not required. Modification of any of the prior art references to include an identifier consisting only of any MD5 hash would constitute the application of a known technique to a known device, ready for improvement, to yield predictable results, and therefore it would have been obvious to a person of ordinary skill in the art.

Similarly, it would have been obvious to modify use an identifier including a hash combined with a length value, such as the identifiers disclosed in Woodhill. Such a modification or combination would have been desirable to reduce the likelihood of hash collisions. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

3. Combining or modifying prior art references to identify files with hashes of the contents of files would have been obvious.

To the extent PersonalWeb contends that any reference does not disclose identifying a file or files with a hash of the contents of the files, a person of skill in the art at the time of the asserted patents would have found it obvious to modify the references to include this feature

and/or to combine the reference with one of the many prior art references identified above that disclose it. Identifying files with hashes of the contents of the files was old by the time of the asserted patents, and multiple prior art references, including those cited above, used such techniques for precisely the same reason as that of the asserted patents, i.e., content-based, location-independent substantially unique identification of a file.

A person of ordinary skill therefore would have found it obvious to apply the prior art teachings to enable client requests for files that use content-based identifiers including a hash of the contents of a file. The Langer Publication, Kantor Publication, and The Frederick W. Kantor Contents-Signature System Version 1.22 Product provide express motivation to make this combination by disclosing that the use of a unique, location-independent identifier allows a client user to automatically access a file from the nearest location. Such a combination of the known techniques from the Langer Publication, Kantor Publication, or The Frederick W. Kantor Contents-Signature System Version 1.22 Product to a known system such as the device describe in the Liskov Publication, which stood ready for improvement, would yield the predictable result of improving file access using unique identifiers. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

4. Combining or modifying prior art references to distribute files in a network over multiple servers would have been obvious.

To the extent PersonalWeb contends that any reference does not disclose distributing multiple files in a network over multiple servers, a person of skill in the art at the time of the asserted patents would have found it obvious to modify the references to include these feature and/or to combine the reference with one of the many prior art references identified above that disclose it.

Distributing files in a network including many servers was well known in the art. Adding additional remote backup file servers to a reference like the Woodhill Patent or the Legent Enterprise Storage Manager Product would constitute applying a known technique (i.e., adding extra redundancy) to a known device, method, or product ready for improvement to yield predictable results. Therefore it would be obvious to a person of ordinary skill in the art exercising ordinary creativity. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

5. Combining or modifying prior art references to divide and store files into segments would have been obvious.

To the extent PersonalWeb contends that any reference does not disclose dividing files into segments, a person of skill in the art at the time of the asserted patents would have found it obvious to modify the references to include these feature and/or to combine the reference with one of the many prior art references identified above that disclose it.

Dividing a large file into segments was a well-known technique to handle large files, such as databases. Prior art references cited above disclose dividing a particular data item into a plurality of segments (e.g., subdividing a large file into “granules”). The Woodhill Patent and Legent Enterprise Storage Manager Product also disclose that the most important class of “large” files on a networked computer system is databases, and that on a given day, only a small percentage of the data in a large database is changed by the users of that database. Therefore, subdividing files into “granules” reduces the amount of data that must be transmitted when copying the database to a remote backup file server. The Woodhill Patent and Legent Enterprise Storage Manager disclose dividing a data item into a plurality of segments (e.g., dividing files into “binary objects,” and further dividing the binary object into “granules”). Thus, dividing files into smaller segments (e.g., “binary objects,” and “granules”) is a known and effective

technique to reduce the amount of data that must be transmitted (i.e., smaller segments instead of entire files are transmitted). Applying this technique to other prior art references would constitute the application of a known technique to a known device, ready for improvement, to yield predictable results, and therefore it would be obvious to a person of ordinary skill in the art. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

6. Combining or modifying prior art references to control access for unlicensed or unauthorized users or computers would have been obvious.

To the extent PersonalWeb contends that any reference identified by Defendants does not disclose the licensing/authorization limitations of the '442 and '310 Patents⁷ and the selective permission limitations of the '310 Patent,⁸ such limitations would have been well known to one of ordinary skill in the art. For example, such limitations are disclosed in U.S. Patent No. 5,978,791 issued to Ginter et al. (2:37-39 and 6:17-31); U.S. Patent No. 6,119,151 issued to Cantrell et al. (7:8-18); U.S. Patent No. 5,452,447 issued to Nelson et al. (1:36-52 and 18:31-46); U.S. Patent No. 5,163,147 issued to Orita (1:11-33, 1:52-2:18, and 4:52-55); U.S. Patent No. 7,359,881 issued to Stefik et al. (6:25-65, 7:15-31, 7:51-59, and 9:43-67); "The Vesta Repository: A File System Extension for Software Development," by Chiu et al. (p. 10); "A Coherent Distributed File Cache With Directory Write-behind," by Mann et al. (pp. 29-31); U.S.

⁷ See, e.g., '442 Patent, claim 1 ("wherein a copy of the requested file is only provided to licensed parties"); '442 Patent, claim 7 ("wherein a copy of the requested file is not provided to unlicensed parties or to unauthorized parties"); and '310 Patent, claim 24 ("not allowing the particular data item to be provided to or accessed by the second computer if it is determined that access to the particular data item is not authorized")

⁸ See, e.g., '310 Patent, claim 70 ("selectively permitting the particular data item to be accessed at or by one or more computers in the network of computers"); '310 Patent, claim 70 ("selectively allow said particular sequence of bits to be provided to or accessed by other devices depending on whether or not said content-dependent identifier corresponds to one of the plurality of values"); and '310 Patent, claim 86 ("selectively allow the particular sequence of bits to be provided to or accessed by other devices in the system").

Patent No. 5,412,717 issued to Fischer (8:45-9:2); U.S. Patent No. 5,606,609 issued to Houser et al. (13:4-20 and 14:52-65), “Copy Detection Mechanisms for Digital Documents,” by Brin et al., “Distributed File Systems,” by Andrew S. Tanenbaum (pg. 247), and U.S. Patent 5,687,361 issued to Sarkar.

The idea of providing access controls for data was well within the knowledge of one of ordinary skill in the art at the time of the alleged invention as such schemes were commonly implemented in large scale data processing systems as evidenced above. One of ordinary skill in the art would have understood how to implement such access control to prevent or grant access to data based on the user’s (or client’s) identity and the identity of the data being requested. Such implementation would have been carried out using a known technique to achieve a predictable result. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

7. Combining or modifying prior references to use known distributed computing or data processing system techniques would have been obvious.

To the extent that PersonalWeb contends that any prior reference does not disclose certain limitations of a distributed computer or data processing system (e.g., “a system which includes a network of computers” (’310 Patent, claim 70), “a system in which a plurality of files are distributed across a plurality of computers” (’442 Patent, claims 1, 7), “a plurality of distinct storage locations” (’662 Patent, claim 1), and “at least one computer distinct from said plurality of storage locations” (’662 Patent, claim 1)) and/or that these computers communicate using TCP/IP (e.g., ’442 Patent, claim 7), such limitations would have been well known to one of ordinary skill in the art. For example, such features are disclosed in “Distributed File Systems,” by Andrew S. Tanenbaum (*see* Chapter 5); U.S. Patent No. 5,163,147 issued to Orita (2:53-3:55); U.S. Patent No. 4,641,274 issued to Swank (3:8-56); “The Vesta Repository: A File

System Extension for Software Development,” by Chiu et al. (pp. 2-3, 7, 13, and 21); “The Vesta Approach to Precise Configuration of Large Software Systems,” by Levin et al. (pp. 3-4, 13-14, and 20-21); “A Coherent Distributed File Cache With Directory Write-Behind,” by Mann et al. (pp. 1-4); “A User-Level Replicated File System,” by Glenn Fowler et al. (p. 282); U.S. Patent No. 5,819,292 issued to Hitz et al. (1:18-2:29 and 4:6-43); U.S. Patent No. 5,453,447 issued to Nelson et al. (1:43-52 and 18:49-19:10); U.S. Patent No. 5,404,508 issued to Konrad et al. (1:17-51 and 5:58-22); U.S. Patent No. 5,640,564 issued to Hamilton et al. (1:16-23); U.S. Patent No. 6,816,872 issued to Squibb (1:13-24 and 5:8-30); U.S. Patent No. 5,434,994 issued to Shaheen et al. (FIG. 1, 1:8-42, 2:45-3:2, and 3:42-4:25); U.S. Patent No. 5,511,190 issued to Sharma et al. (4:60-5:46); U.S. Patent No. 5,559,984 issued to Nakano et al. (Abstract, 1:5-35, and 4:30-5:47); U.S. Patent No. 5,596,748 issued to Kleewein et al.; U.S. Patent No. 5,611,049 (1:30-52 and 3:11-60); U.S. Patent No. 5,668,986 issued to Nilsen et al. (Abstract, 1:19-31 and 3:1-4:16); U.S. Patent No. 5,412,717 issued to Fischer (4:45-5:18); U.S. Patent No. 5,475,826 issued to Fischer (4:22-5:12); U.S. Patent No. 5,764,972 issued to Crouse et al. (1:39-54, 2:6-60, 7:37-11:9, and 9:25-46); U.S. Patent No. 6,119,151 issued to Cantrell et al. (Abstract, FIG. 1, 1:16-2:60, 3:1-20), “Issues in the Design and Use of a Distributed File System,” by Sturgis et al. (pp. 55-60); the Network File System (“NFS”) protocol as evidenced by the Network Working Group Request for Comment 1094 (pp. 1-3), “Ficus: A Very Large Scale Reliable Distributed File System,” by Richard G. Guy (pp. 1-4), “WFS: A Simple Shared File System for a Distributed Environment,” by Swinehart et al. (pp. 1-3), and U.S. Patent No. 5,649,196 issued to Woodhill (Abstract, FIG. 1, 1:19-63, and 3:7-4:11).

One of ordinary skill in the art would have understood how to combine the teachings of any of the above references with a reference missing such limitations and would have been

motivated to pursue such combinations for numerous reasons. For example, the references identified above demonstrate that distributed computer systems, data processing systems, and databases provide increased computing power as multiple processors can simultaneously work on separate tasks, enable shared memories to serve a plurality of clients such that data can be distributed to numerous users, and provide for improved availability, reliability, and protection from a disaster by replicating data in geographically distinct locations. These and other advantages are described in at pages 3-6 of “Distributed Operating Systems,” by Andrew S. Tanenbaum. Moreover, such motivations to combine one or more of these references are explicitly disclosed in the background sections of many of the above-identified references and were readily understood by one of ordinary skill in the art. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

8. Combining or modifying prior art references to use a pre-determined degree of data redundancy was obvious.

To the extent that PersonalWeb contends that any prior reference identified by Defendants do not disclose storing data with a pre-determined degree of redundancy, such limitations⁹ would have been well known to one of ordinary skill in the art at the time of the alleged invention. For example, such features are disclosed in “Ficus: A Very Large Scale Reliable Distributed File System,” by Richard G. Guy (pp. 4-5 and 39-54); “Implementation of the Ficus Replicated File System,” by Guy et al. (pp. 2 and 5-6); “The Vesta Repository: A File

⁹ See ’662 Patent, claim 1: “wherein each data item in the file system is stored at multiple distinct storage locations in the file system, based, at least in part, on a predetermined degree of redundancy for said file system;” “whether deletion of said particular data item from said given storage location will leave a sufficient number of copies of said data item present at one or more other storage locations in the file system to satisfy said predetermined degree of redundancy for said file system with respect to that particular data item;” and “if it is determined that deletion of the particular data item from the given storage location will leave at least a sufficient number of copies of said data item at one or more other storage locations in said file system to satisfy said predetermined degree of redundancy for said file system with respect to that particular data item.”

System Extension for Software Development,” by Chiu et al. (p. 21); “A Coherent Distributed File Cache With Directory Write-behind,” by Mann et al. (pp. 23-24); “A File System for Mobile Computing,” by Tait (pp. 11-18); U.S. Patent No. 5,668,986 issued to Nilsen et al. (Abstract and 1:19-54); U.S. Patent No. 5,649,196 issued to Woodhill et al. (1:6-2:19 and 3:7-4:11); U.S. Patent No. 5,819,292 issued to Hitz et al. (1:18-32); U.S. Patent No. 6,816,872 issued to Squibb; U.S. Patent No. 5,835,940 issued to Yorimitsu; U.S. Patent No. 5,404,508 issued to Konrad et al. (Abstract, 1:21-51, and 4:38-63); U.S. Patent No. 5,764,972 issued to Crouse et al. (Abstract, 4:22-41, and 5:1-43); and U.S. Patent No. 5,434,994 issued to Shaheen et al. (Abstract, 2:45-66, and 4:43-5:11).

One of ordinary skill in the art would have been motivated to combine the teachings of any of the above references with a reference that does not explicitly disclose a predetermined redundancy as providing redundant information is one of the desirable features of a distributed database. By providing a predetermined degree of redundancy, a degree of fault tolerance is provided by the distributed database as the failure of one server will not affect the ability of a user to gain access to data that is replicated in another location. Indeed, the Konrad reference teaches:

Business and society in general are increasingly relying on the availability of data processing systems and the information they process. The cost of a failed data processing system to a business can be enormous, both in terms of idled resources and the opportunity costs associated with unprocessed information. There may be employees whose Jobs [sic] are directly tied to the availability of the system, as well [sic] business transactions which are tied to system availability. Thus, when a data processing system fails, there may be costs associated with unproductive labor and lost business opportunities such as sales of airline tickets, sales of shares of stock, or transfers of money. In short, data base availability means the difference between success and failure in the marketplace.

Konrad at 1:21-35. As the Asserted Claims do not require a particular methodology to achieve the “predetermined degree of redundancy,” the normally skilled person would have been free to select from any of the available prior art methods to achieve such redundancy and implemented the selected solution in a known manner. Additional reasons to modify, extend, or combine may be identified in the attached claim charts.

9. Combining or modifying prior art references to practice other claim limitations relating to accounting information and records were obvious.

Other claim limitations in the Asserted Claims that would have been well known to one of ordinary skill in the art include “maintaining accounting information relating to the data files” (’442 Patent, claim 4), “a table including a plurality of records indicating changes made to said file system” (’662 Patent, claim 1), and “updating a record in said list to reflect deletion of said particular data item from the file system” (’662 Patent, claim 30). Such features were well within the knowledge of one of ordinary skill in the art and were widely used in the prior art in order to maintain coherency across distributed data processing and file systems. For example, these and other features are disclosed in “Issues in the Design and Use of a Distributed File System,” by Sturgis et al.; “The Vesta Repository: A File System Extension for Software Development,” by Chiu et al.; U.S. Patent No. 7,133,845 issued to Ginter et al.; U.S. Patent No. 7,359,881 issued to Stefik et al.; U.S. Patent No. 5,649,196 issued to Woodhill; U.S. Patent No. 5,475,826 issued to Fischer; U.S. Patent No. 6,816,872 issued to Squibb; “A Coherent Distributed File Cache With Directory Write-behind,” by Mann et al. (pp. 23-34); “A File System for Mobile Computing,” by Tait (pp. 22-42); U.S. Patent No. 6,076,084 issued to Even (1:26-40 and 2:47-3:20); U.S. Patent No. 5,819,292 issued to Hitz et al. (1:58-2:29); U.S. Patent No. 5,452,447 issued to Nelson (7:49-8:13 and 18:48-65); U.S. Patent No. 5,404,508 issued to

Konrad et al. (Abstract and 10:6-58); U.S. Patent No. 6,119,151 to Cantrell et al. (3:1-20); U.S. Patent No. 5,434,994 issued to Shaheen et al. (Abstract and 5:12-42); and Nilsen et al. (1:19-54).

One of ordinary skill in the art would have understood how to combine the teachings of any of the above references with a reference not explicitly disclosing such limitations. Indeed, tables, lists, and logs identifying changes to a database are common in databases of any size to keep track of when a file is created, updated, deleted, or when an by whom the file is accessed. Thus, one of ordinary skill in the art would have had the requisite motivation and knowhow to combine any of the above references with a reference not explicitly identify such tables and lists.

Thus, for each Asserted Claim, it would have been obvious to one of ordinary skill in the art to combine each of these references with any of the other references identified in Section III of the attached exhibits.

A motivation and/or incentive to combine each of the prior art references and products identified in the accompanying appendices comes from many sources, including, but not limited to, the known, published prior art references and products themselves, the knowledge of those of ordinary skill in the art, the common field of technology of the references, the commonality of the objectives and purposes of the references, and the teachings in the references directed to solving the problems that the Patents-in-Suit were allegedly directed to solving. These references identify and address many of the same technical issues and suggest similar solutions to those issues. Reasons or motivations to combine the prior art would thus include, for example, the fact that the prior art is all in the art of data processing systems, and one of ordinary skill in the art implementing such a device would be motivated to investigate the various related existing devices, publications, and/or patents identified in these Invalidity Contentions to address these particular needs. Moreover, many of these references cross-reference and discuss one

another, illustrating the close technical relationship among this group of references. To the extent any piece of prior art refers to or discusses other pieces of prior art, either expressly or inherently, it would have been obvious to combine those pieces of prior art for that reason. In addition, design incentives and other market forces would have prompted those combinations and modifications. Furthermore, many of the prior art references arise from common assignees or multiple companies operating within the relevant subject matter.

Another motivation to combine references includes the common objectives and subject matter of the identified references. For example, a number of industry standards file systems, and interfaces—a UNIX file system, The Andrew File System (“AFS”), the Coda file system, the Network File System (“NFS”), the Remote File Sharing (“RFS”) system, the CAP filing system, the Distributed File System (“DFS”), the Berkeley Fast File System (“FFS”), the Episode File System, and the Ficus file system—were known and used throughout the data storage industry around the time of alleged inventions of the Patents-in-Suit. Employees at companies in the pertinent fields used and/or knew of these standards, and also invented and/or marketed their own systems, disclosed herein. Accordingly, the teachings of the individual prior art references, combined with the industry knowledge of a person of ordinary skill in the art at the time of the alleged invention of the Patents-in-Suit, would render obvious the Asserted Claims.

Any of the references listed in Section III and the attached exhibits may be combined to render obvious, and therefore invalidate, each of the Asserted Claims as demonstrated above. In addition, because multiple claims contain the same limitation, Defendants have not always repeated every reference that discloses a particular limitation in each instance of that limitation in the Asserted Claims. Accordingly, to provide disclosure for any given element, Defendants

reserves the right to rely upon any reference identified in the accompanying Appendices that discloses that same limitation.

If and to the extent that Plaintiffs challenge the applicability of any of these references with respect to a particular claim limitation or challenges the combinations identified in the accompanying claim charts, Defendants reserve the right to supplement these Invalidity Contentions to substitute other references to combine and/or to identify motivations to combine particular references with one another with additional particularity.

If and to the extent that Plaintiffs assert that the prior art is not enabling, Defendants reserve the right to raise lack of enablement as to that aspect of the Patents-in-Suit.

The above discussion is illustrative only. Defendants reserve the right to further specify the motivations to combine the prior art in response to positions that PersonalWeb may take later in this case, as discovery, including third party discovery, continues. Defendants reserve the right to rely on any and all portions of the prior art, other documents, and expert testimony to establish that a person of ordinary skill in the art would have been motivated to modify or combine the prior art so as to render the claims invalid as obvious.

E. Illustrative Obviousness Combinations

Numerous prior art references, including those identified above, reflect common knowledge and the state of the prior art before the priority date of the patents-in-suit. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Defendants have provided illustrative examples of such invalidating combinations herein and in the attached charts. For at least the reasons described above and below in the examples provided, as well as the combinations described in the attached claim charts (Exhibits A-G), it would have been obvious to one of ordinary skill in the art to combine any of a number

of prior art references to meet the limitations of the asserted claims. As such, Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate.

1. Illustrative Obviousness Combinations for '791 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Langer Publication (56)	LIFN Publications (51-53) LIFN System (102) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22

Primary Reference	Secondary References
	Product (103) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Kantor Publication (54)	Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) LIFN Publications (51-53) LIFN System Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Frederick W. Kantor Contents-Signature System Version 1.22 Product (103)	Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) LIFN Publications (51-53) LIFN System Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Woodhill Patent (1)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56)

Primary Reference	Secondary References
	Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Vesta Software Configuration Management System (105)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Fischer Patent (3)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication

Primary Reference	Secondary References
	Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Konrad Patent (23)
Williams' Blocklets System (104)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Konrad Patent (23)
Mammel Patent (7)	Konrad Patent (23)
Sarkar Patent (11)	Konrad Patent (23)

2. Illustrative Obviousness Combinations for '280 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101)

Primary Reference	Secondary References
	Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Woodhill Patent (1)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
ESM: Product Introduction (55)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22

Primary Reference	Secondary References
	Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Satyanarayanan I Publication (59)	Langer Publication (56) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103)
Satyanarayanan II Publication (60)	Langer Publication (56) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103)
Vesta Software Configuration Management System (105)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105)

Primary Reference	Secondary References
	Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Ginter Patent (19)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Konrad Patent (23)
Williams' Blocklets System (104)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Konrad Patent (23)

Primary Reference	Secondary References
Kikuchi Patent (6)	Konrad Patent (23)

3. Illustrative Obviousness Combinations for '442 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Woodhill Patent (1)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64)

Primary Reference	Secondary References
	Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Rao Publication (63)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Manber Publication (62)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22

Primary Reference	Secondary References
	Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Nelson Patent (24)
Ginter Patent (19)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Konrad Patent (23)
Williams' Blocklets System (104)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65)

Primary Reference	Secondary References
	Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Nelson Patent (24)
Kikuchi Patent (6)	Konrad Patent (23)
Mammel Patent (7)	Nelson Patent (24)
Hamilton Patent (10)	Nelson Patent (24)

4. Illustrative Obviousness Combinations for '310 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3)

Primary Reference	Secondary References
	Swank Patent (5) Brin Publication (61)
Woodhill Patent (1)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Rao Publication (63)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2)

Primary Reference	Secondary References
	Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Manber Publication (62)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Nelson Patent (24)
Ginter Patent (19)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Konrad Patent (23)
Williams' Blocklets System (104)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54)

Primary Reference	Secondary References
	Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Nelson Patent (24)
Kikuchi Patent (6)	Konrad Patent (23)
Mammel Patent (7)	Nelson Patent (24)
Hamilton Patent (10)	Nelson Patent (24)

5. Illustrative Obviousness Combinations for '539 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105)

Primary Reference	Secondary References
	Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Langer Publication (56)	LIFN Publications (51-53) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Kantor Publication (54)	LIFN Publications (51-53) LIFN System (102) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Frederick W. Kantor Contents-Signature System Version 1.22 Product (103)	LIFN Publications (51-53) LIFN System (102) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64)

Primary Reference	Secondary References
	Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Woodhill Patent (1)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System (102) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System (102) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Vesta Software Configuration Management (104)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System (102) Langer Publication (56)

Primary Reference	Secondary References
	Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)

6. Illustrative Obviousness Combinations for '544 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18)

Primary Reference	Secondary References
	Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Langer Publication (56)	LIFN Publications (51-53) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Kantor Publication (54)	LIFN Publications (51-53) LIFN System (102) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Frederick W. Kantor Contents-Signature System Version 1.22 Product (103)	LIFN Publications (51-53) LIFN System (102) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Woodhill Patent (1)	Kantor Publication (54)

Primary Reference	Secondary References
	Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System (102) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System (102) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Vesta Software Configuration Management (105)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System (102) Langer Publication (56) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61)

Primary Reference	Secondary References
	Griswold Patent (4)
Williams' Blocklets System (104)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) LIFN System (102) Langer Publication (56) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Vesta Software Configuration Management (105)

7. Illustrative Obviousness Combinations for '662 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Konrad Patent (2) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Ritchie Publication (87)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64)

Primary Reference	Secondary References
	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Konrad Patent (2) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Ritchie Publication (87)
Woodhill Patent (1)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Konrad Patent (2) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Ritchie Publication (87)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Konrad Patent (2) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Ritchie Publication (87)

Primary Reference	Secondary References
Kantor Publication (54)	LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Konrad Patent (2) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Ritchie Publication (87)
Frederick W. Kantor Contents-Signature System Version 1.22 Product (103)	LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Konrad Patent (2) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Ritchie Publication (87)
Teuhola Publication (65)	Konrad Patent (2)
Brin Publication	Squibb Patent (17)
Kikuchi Patent (6)	Squibb Patent (17)
Swank Patent (5)	Squibb Patent (17)
Sarkar Patent (11)	Konrad Patent (23)
Hamilton Patent (10)	Konrad Patent (23)
Vesta Software Configuration Management (104)	Konrad Patent (23)
Yorimutsu Patent (13)	Konrad Patent (23) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Konrad Patent (2) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Fischer Patent (3)

Primary Reference	Secondary References
	Swank Patent (5) Brin Publication (61) Griswold Patent (4)

8. Illustrative Obviousness Combinations for '096 Patent

Primary Reference	Secondary References
LIFN Publications (51-53)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Teuhola Publication (65) Mammel Patent (7) Ginter Patent (18) Tierney Publication (58) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
LIFN System (102)	LIFN Publications (51-53) Langer Publication (56) Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Vesta Software Configuration Management System (105) Chiu Publication (64) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) Teuhola Publication (65) Mammel Patent (7) Ginter Patent (18) Tierney Publication (58) Fischer Patent (3) Swank Patent (5) Brin Publication (61)
Woodhill Patent (1)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53)

Primary Reference	Secondary References
	Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Teuhola Publication (65) Mammel Patent (7) Ginter Patent (18) Tierney Publication (58) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Legent Enterprise Storage Manager Product (101)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Teuhola Publication (65) Mammel Patent (7) Ginter Patent (18) Tierney Publication (58) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Vesta Software Configuration Management System (105)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Chiu Publication (64) Teuhola Publication (65) Mammel Patent (7) Ginter Patent (18) Tierney Publication (58) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)
Ginter Patent (19)	Woodhill Patent (1) Legent Enterprise Storage Manager Product (101) Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22

Primary Reference	Secondary References
	Product (103) LIFN Publications (51-53) LIFN System Langer Publication (56) Vesta Software Configuration Management System (105) Chiu Publication (64) Teuhola Publication (65) Mammel Patent (7) Tierney Publication (58) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4) Konrad Patent (23)
Swank Patent (5)	Kantor Publication (54) Frederick W. Kantor Contents-Signature System Version 1.22 Product (103) LIFN Publications (51-53) Langer Publication (56) Chiu Publication (64) Manber Publication (62) Teuhola Publication (65) Stefik Patent (2) Ginter Patent (18) Tierney Publication (58) Fischer Patent (3) Swank Patent (5) Brin Publication (61) Griswold Patent (4)

IV. INVALIDITY CONTENTIONS BASED ON 35 U.S.C. § 112

Defendants lists below grounds upon which Defendants presently contend the Asserted Claims of the Patents-in-Suit are invalid for failure to meet one or more of the requirements of 35 U.S.C. § 112. A more detailed basis for Defendants' written description, enablement, and/or indefiniteness defenses will be set forth in Defendants' expert reports on invalidity, to be served in accordance with the Court's Discovery Order and Docket Control Order. Defendants have not yet taken any depositions related to these issues. Defendants specifically reserve the right to

amend and/or supplement these Invalidity Contentions based on a failure to comply with the requirements of 35 U.S.C. § 112.

Subject to the reservation of rights above, Defendants provide below an identification of asserted claims that are—at least as apparently construed by PersonalWeb in its Infringement Contentions—invalid pursuant to 35 U.S.C. § 112 as indefinite, not enabled, or lacking a sufficient written description

1. '791 Patent

Claims 1 and 2 of the '791 patent are invalid under 35 U.S.C. § 112, ¶ 1 for lacking enablement and/or written description. Claim 1 includes the following claim limitation: “existence means for determining whether a particular data item is present in the system, by examining the identifiers of the plurality of data items. To the extent that the claimed “existence means” is interpreted by PersonalWeb or construed by the Court as anything other than the use of a hash table in the system’s memory to compare a substantially unique identifier of a first, saved data item with the substantially unique identifier of a second data item, then this limitation lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is therefore invalid.

Similarly, Claim 2 includes the following claim limitation: “local existence means for determining whether an instance of a particular data item is present at a particular location in the system, based on the identifier of the data item.” To the extent that the claimed “existence means” is interpreted by PersonalWeb or construed by the Court as anything other than the use of a hash table in the local computer’s memory to compare a substantially unique identifier of a first, saved data item with the substantially unique identifier of a second data item, then this limitation lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is therefore invalid.

Moreover, these limitations are not enabled because examining content-based identifiers can only determine that a data item is not in the system, *not* whether a data item is present.

In addition, the term “identity means” in claim 1 of the ’791 patent, and the terms “data associating means” and “access means” in claim 4 of the ’791 patent, are invalid as indefinite under 35 U.S.C. § 112, ¶ 2.

2. ’280 Patent

In claim 36 of the ’280 patent, to the extent that the claim is construed to require a “hash of the contents of the data file” that is based on less than all of and only the data item, the claim fails to satisfy written description and the patent does not enable the full scope of such a claim under 35 U.S.C. § 112, ¶ 1.

In claim 38 of the ’280 patent, to the extent that the claim is construed to require a “value” that is based on less than all of and only the data item, the claim fails to satisfy written description and the patent does not enable the full scope of such a claim under 35 U.S.C. § 112, ¶ 1.

3. ’442 Patent

In claims 1 and 7 of the ’442 patent, the phrase “a name for a data file” lacks adequate written description and is not enabled for the full scope of the claims under 35 U.S.C. § 112, ¶ 1 to the extent that PersonalWeb or the Court interprets it as anything other than including at least in part a substantially unique identifier or True Name that is based on all of the contents of the data file and only the contents of the data file.

Similarly, in claims 1 and 7 of the ’442 patent, the phrase “contents of the data file” lacks adequate written description and is not enabled for the full scope of the claims under 35 U.S.C. § 112, ¶ 1 to the extent that PersonalWeb or the Court interprets it as anything other than requiring all of the contents of the data file and only the contents of the data file.

In addition, in claims 1 and 7 of the '442 patent, the claim limitations “wherein a copy of the requested file is only provided to licensed parties” and “wherein a copy of the requested file is not provided to unlicensed parties or to unauthorized parties” lack adequate written description and are not enabled under 35 U.S.C. § 112, ¶ 1.

In claim 4 of the '442 patent, the claim limitation “maintaining accounting information relating to the data files” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is indefinite under 35 U.S.C. § 112, ¶ 2.

4. '662 Patent

In claim 30 of the '662 patent, to the extent that the claimed “digital data item identifier” is interpreted by PersonalWeb or construed by the Court as anything other than a substantially unique identifier or True Name that is determined using all of the contents of the data item and only the contents of the data item, then this limitation lacks adequate written description and is not enabled for the full scope of the claims under 35 U.S.C. § 112, ¶ 1.

In claim 30 of the '662 patent, the limitation “updating a record in said list to reflect deletion of said particular data item from the file system, said record including the particular digital data item identifier to the list” lacks adequate written description under 35 U.S.C. § 112, ¶ 1.

5. '310 Patent

In claim 24 of the '310 patent, to the extent that the claimed “content-dependent name” is interpreted by PersonalWeb or construed by the Court as anything other than being based at least in part on a substantially unique identifier or True Name that is based on all of the contents of the data item and only the contents of the data item, then this limitation lacks adequate written description and is not enabled for the full scope of the claims under 35 U.S.C. § 112, ¶ 1, and is therefore invalid.

Similarly, in claim 24 of the '310 patent, to the extent that the claimed “contents of the particular data item” is interpreted by PersonalWeb or construed by the Court as anything other than requiring all of the contents of the data item and only the contents of the data item, then this limitation lacks adequate written description and is not enabled for the full scope of the claims under 35 U.S.C. § 112, ¶ 1.

In claim 24 of the '310 patent, the phrase “a request regarding a particular data item” is indefinite under 35 U.S.C. § 112, ¶ 2.

In claim 24 of the '310 patent, the claim limitation “causing the content-dependent name of the particular data item to be compared to a plurality of values” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is indefinite under 35 U.S.C. § 112.

In claim 24 of the '310 patent, the claim limitation “determining whether or not access to the particular data item is unauthorized” is invalid for lack of written description under 35 U.S.C. § 112, ¶ 1.

In claim 24 of the '310 patent, the claim limitation “(iii) based on said determining in step (ii), not allowing the particular data item to be provided to or accessed by the second computer if it is determined that access to the particular data item is not authorized” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is indefinite under 35 U.S.C. § 112, ¶ 2.

Claim 32 of the '310 patent is invalid under 35 U.S.C. § 112, ¶ 4 for failing to further limit the claim from which it depends.

In claim 70 of the '310 patent, the claim limitation “the content-based identifier for the particular data item being based at least in part on a given function of at least some data which

comprise the contents of the particular data item” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1.

In claim 70 of the ’310 patent, to the extent that the claimed “content-based identifier” is interpreted by PersonalWeb or construed by the Court as anything other than requiring all of the contents of the data item and only the contents of the data item, then this limitation lacks adequate written description and is not enabled for the full scope of the claims under 35 U.S.C. § 112, ¶ 1.

In claim 70 of the ’310 patent, the claim limitation “based at least in part on said determining in step (A), selectively permitting the particular data item to be accessed at or by one or more computers in the network of computers, said one or more computers being distinct from said first computer” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is indefinite under 35 U.S.C. § 112, ¶ 2.

In claim 81 of the ’310 patent, the claim limitation “the content-based identifier being based at least in part on a function of at least some of the particular sequence of bits” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1.

In claim 81 of the ’310 patent, the claim limitation “(c) selectively allow said particular sequence of bits to be provided to or accessed by other devices depending on whether or not said content-dependent identifier corresponds to one of the plurality of values” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is indefinite under 35 U.S.C. § 112, ¶ 2.

In claim 86 of the ’310 patent, the claim limitation “(b) selectively allow the particular sequence of bits to be provided to or accessed by other devices in the system, based at least in part on whether or not the digital identifier for the particular sequence of bits corresponds to a

value in a plurality of values, each of the plurality of values being based, at least in part, on the given function of at least some of the bits in a corresponding sequence of bits” lacks adequate written description and is not enabled under 35 U.S.C. § 112, ¶ 1, and is indefinite under 35 U.S.C. § 112, ¶ 2.

In claim 80 of the '310 patent, to the extent that the claimed “digital identifier” is interpreted by PersonalWeb or construed by the Court as anything other than requiring all of the contents of the data item and only the contents of the data item, then this limitation lacks adequate written description and is not enabled for the full scope of the claims under 35 U.S.C. § 112, ¶ 1.

6. '539 Patent

In claim 10 of the '539 patent, to the extent that the claim is construed to require a “first identifier” or a “segment identifier” that is based on less than all of and only the data item, the claim fails to satisfy written description and the patent does not enable the full scope of such a claim under 35 U.S.C. § 112, ¶ 1.

In claim 21 of the '539 patent, to the extent that the claim is construed to require a “first data identifier” that is based on less than all of and only the data item, the claim fails to satisfy written description and the patent does not enable the full scope of such a claim under 35 U.S.C. § 112, ¶ 1.

In claim 34 of the '539 patent, to the extent that the claim is construed to require a “data item identifier” or a “True Name” that is based on less than all of and only the data item, the claim fails to satisfy written description and the patent does not enable the full scope of such a claim under 35 U.S.C. § 112, ¶ 1.

7. '544 Patent

In claim 1 of the '544 patent, to the extent that the claim is construed to require a “part value,” “first value,” or “second value” that is based on less than all of and only the data item, the claim fails to satisfy written description and the patent does not enable the full scope of such a claim under 35 U.S.C. § 112, ¶ 1.

8. '096 Patent

In claim 1 of the '096 patent, to the extent that the claimed “digital data item identifier,” “digital identifier,” and “digital part identifier” are interpreted by PersonalWeb or construed by the Court as anything other than a substantially unique identifier or True Name that is determined using all of the contents of the data item and only the contents of the data item, then these limitations lack adequate written description and are not enabled for the full scope of the claim under 35 U.S.C. § 112, ¶ 1.

In addition, claim 1 steps A(4) and A(5) as well as the sequence of steps in (C1)-(C5), lack adequate written description under 35 U.S.C. § 112, ¶ 1. The specification does not reasonably convey to one skilled in the art that the named inventors were in possession of an invention satisfying those limitations at the time the patent application was filed.

In claim 81 of the '096 patent, to the extent that the claimed “first data item identifier” and “segment identifiers” are interpreted by PersonalWeb or construed by the Court as anything other than a substantially unique identifier or True Name that is determined using all of the contents of the data item and only the contents of the data item, then these limitations lack adequate written description and are not enabled for the full scope of the claim under 35 U.S.C. § 112, ¶ 1.

In addition, there is inadequate written description under 35 U.S.C. § 112, ¶ 1 for the following limitations of claim 81:

“database comprising a plurality of records, where the records in the database correspond to data items, and where the records in the database include: (i) first data that includes data item identifiers for data items for which the data are stored in the file system as segments; and (ii) second data, keyed on data item identifiers, that maps the data item identifiers to the segments to which the data item identifiers correspond; and (iii) location data, keyed on segment identifiers, that identifies which of the plurality of servers in the file system stores which of the segments, each of said segment identifiers being based, at least in part, on a hash function of all of the data in a corresponding segment;”

and based at least in part on said determining, accessing at least one segment of the first data item from at least one of the plurality of servers in the file system.”

The specification does not reasonably convey to one skilled in the art that the named inventors were in possession of an invention satisfying those limitations at the time the patent application was filed.

In claim 83 of the '096 patent, to the extent that the claimed “file identifiers” and “digital data item identifiers” are interpreted by PersonalWeb or construed by the Court as anything other than a substantially unique identifier or True Name that is determined using all of the contents of the data item and only the contents of the data item, then these limitations lack adequate written description and are not enabled for the full scope of the claim under 35 U.S.C. § 112, ¶ 1.

Limitations (B) and (C) of claim 83 also lack adequate written description under 35 U.S.C. § 112, ¶ 1. The specification does not reasonably convey to one skilled in the art that the named inventors were in possession of an invention satisfying those limitations at the time the patent application was filed.

In addition, in claim 83 of the '096 patent, the claim language “an arbitrary sequence of bits” is indefinite under 35 U.S.C. § 112, ¶ 2.

V. DOCUMENT PRODUCTION ACCOMPANYING INVALIDITY CONTENTIONS

Defendants are serving, concurrently herewith, documentation required by the Court's Orders.

Dated: December 14, 2012

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